EPA Strategic Plan for Citizen Science

Jay Benforado, Chief Innovation Officer, EPA Office of Research and Development

What is citizen science?

★★★★ FINAL

The Minnesota Citizen

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DAILY 5c, SUNDAY 10c | MINNEAPOLIS, WEDNESDAY, JULY 23, 1952 | VOL. LXXXXVII, NO. 320

VOLUNTEERS TO INVESTIGATE THE MIGRATION OF MONARCH BUTTERFLIES

University program relies on cooperation of individuals

In order to better understand the wanderings of our beautiful Monarch Butterfly (*Danaus plexippus*), a unique tagging program has been established by Dr. Fred Urquhart, associate professor of the Department of Zoology, University of Toronto Canada with cooperating research assistants all over Canada and the U.S.

By placing small numbered tags on the forewing of the monarch, it is hoped that much more information will be obtained to supplement the already well known wanderings.

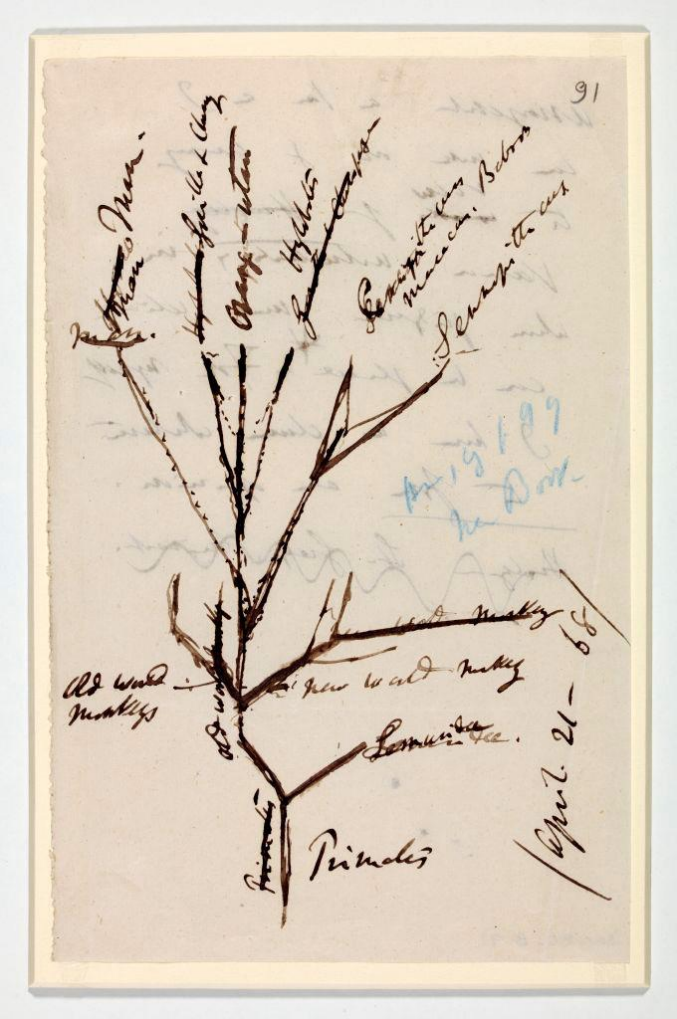
Although a slow flyer in comparison to other butterflies, the monarch is nevertheless a deliberate and strong flyer. In past years it has traveled to such distant places as Great Britain, Hawaii, the East Indies, Australia and New Zealand.

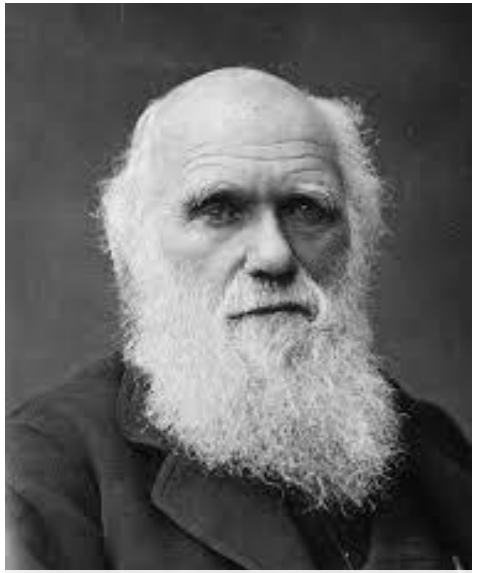
The author is presently finishing his second year as a Research Associate for the University program.

In addition to tagging local Monarchs for the past two years, a new and unique experiment was attempted in recent weeks. Almost daily shipments of live Monarchs are being sent by Airmail from Toronto, Canada to Reno. Each butterfly is tagged, placed in individual glassine envelopes, then packed in a box and promptly sent on to the author where they are released in an open area near Incal AFS, north of Reno. To date over 1,000 have been released.

It will be interesting to see what information this experiment will produce. Where will these Eastern monarchs winter? Will they winter in the wintering areas of the Western Monarch or will they show up in Florida in the wintering areas of their eastern ancestors. We hope that the tagging program will answer this, and many other questions about our beautiful, native migrating Monarch.

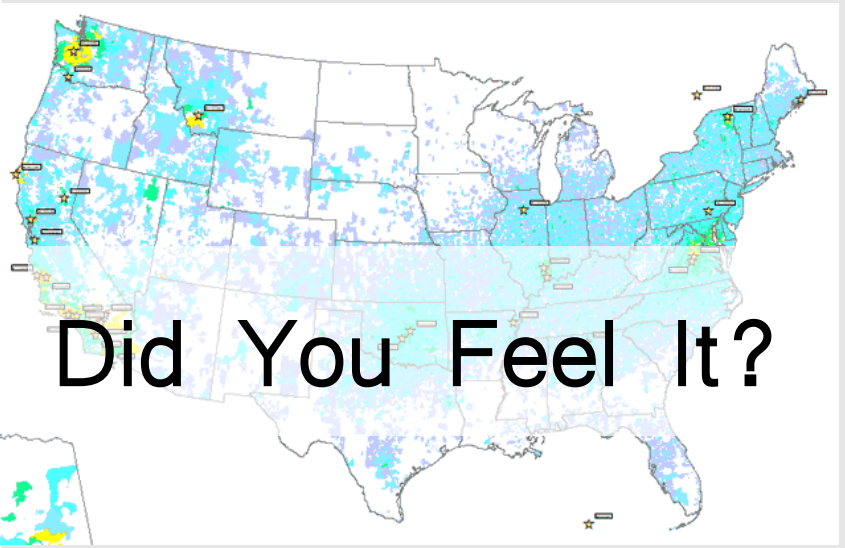
If you find a tagged Monarch dead, send it to Department of Zoology, University of Toronto, Canada. If alive, note the number on the tag, release the butterfly promptly, and send the tag number along with the place of recovery, date, temperature, and any other pertinent information to the university.





Charles Darwin

“The Original Crowd-Sourced Scientist”

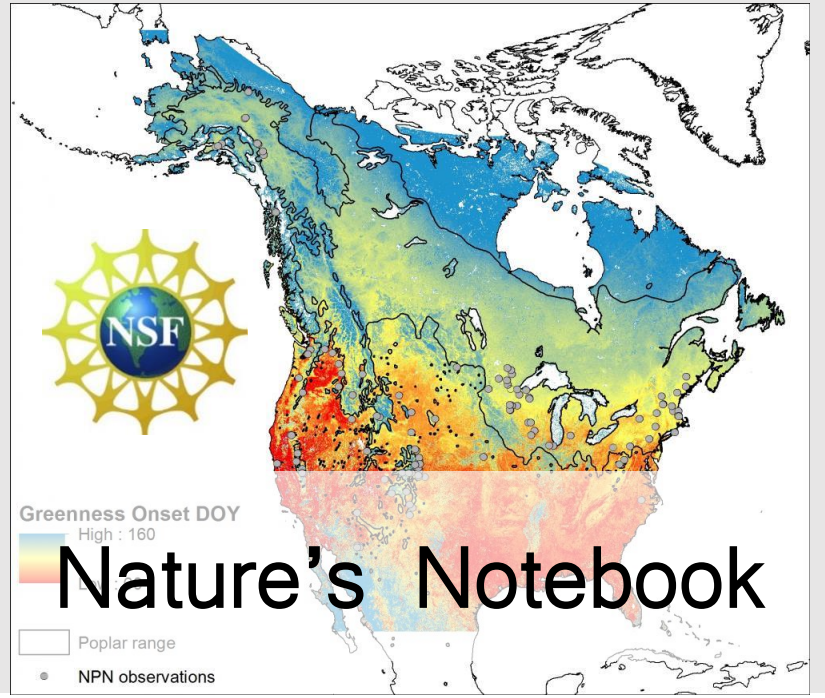


Did You Feel It?

USGS science for a changing world

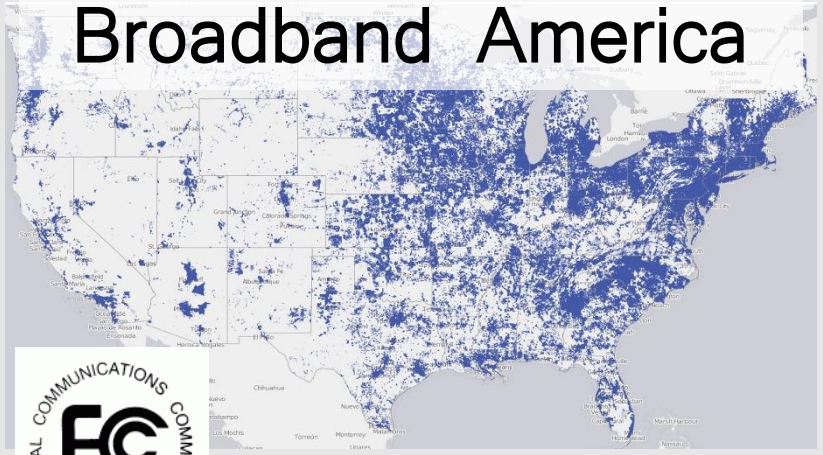
Citizen Archivist Dashboard

NATIONAL ARCHIVES

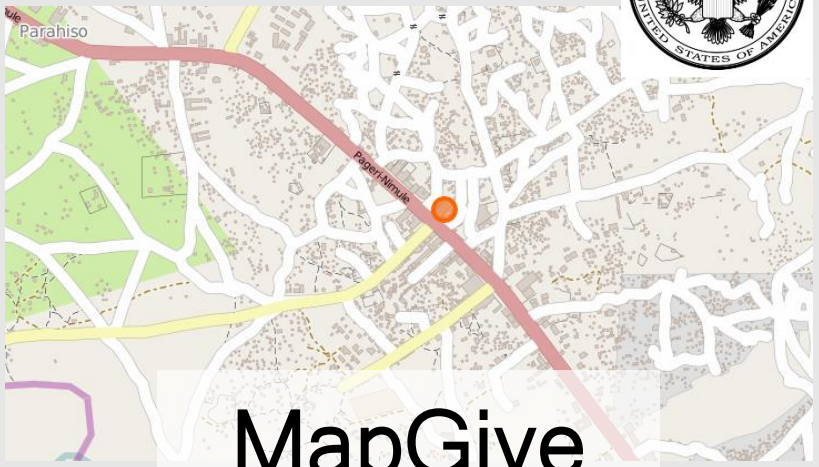


Nature's Notebook

Measuring Broadband America

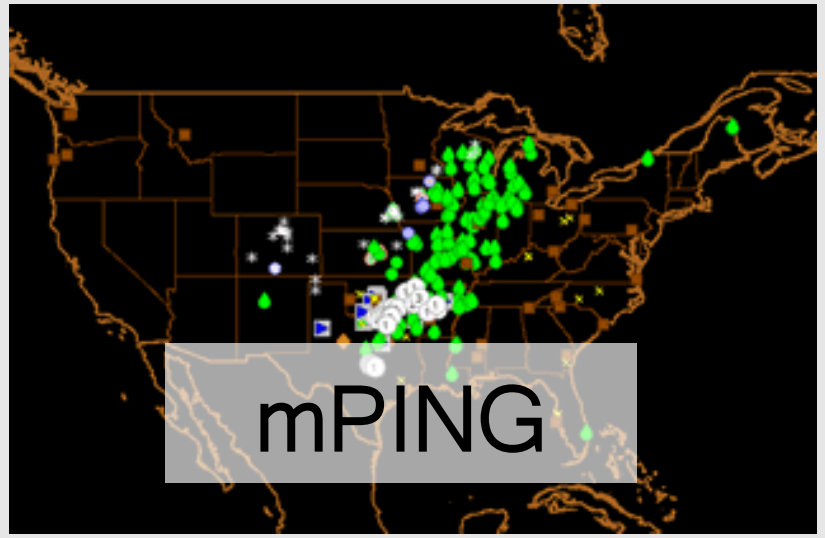


FEDERAL COMMUNICATIONS COMMISSION FCC USA



DEPARTMENT OF STATE UNITED STATES OF AMERICA

MapGive



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NOAA

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

September 30, 2015

MEMORANDUM TO THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: John P. Holdren
Assistant to the President for Science and Technology and
Director of the Office of Science and Technology Policy

SUBJECT: Addressing Societal and Scientific Challenges through Citizen Science and Crowdsourcing

Addressing Societal and Scientific Challenges through Citizen Science and Crowdsourcing

1. Clear benefits and impact for Federal agencies

2. Directs agencies to advance methods by:
   - Identifying agency coordinators
   - Cataloging projects

3. Recommends agency actions to build capacity

citizenscience.gov

Helping federal agencies accelerate innovation through public participation.

Citizenscience.gov is an official government website designed to accelerate the use of crowdsourcing and citizen science across the U.S. government. The site provides a portal to three key components for federal practitioners: a searchable **catalog** of federally supported citizen science projects, a **toolkit** to assist with designing and maintaining projects, and a gateway to a **community** of practice to share best practices.

Explore Projects

catalog

Plan Your Projects

toolkit

Join Our Community

community

See What's Happening in Federal Citizen Science

Follow Us on Twitter

Citizen Science @FedCitSci

Yes! RT @STIPCommonsLab: We already have 8 new projects in the federal #citsci

Federal Community of Practice for Crowdsourcing and Citizen Science

- 50 participating agencies
- Networking: monthly meetings, active listserv, guest speakers
- Impressive array of projects and approaches
- NSF has funded hundreds of citizen science projects!

Federal Crowdsourcing and Citizen Science Toolkit

How To: Step by Step

This toolkit shows five basic process steps for planning, designing and carrying out a crowdsourcing or citizen science project. At each step, you'll find a list of tips you can use to keep your project on track. See the process steps

Case Study Overview

Case studies in this toolkit serve as models and provide success stories and challenges to consider while planning a project. You can browse through agency case studies to get ideas for a project of your own. Browse case studies

Resource Library

The resource library provides a list of all resources in this toolkit which you can browse through by category. You can also find resources within each of the process steps in the "How To" section of the toolkit. View resources

The Project Catalog: Find Federally Sponsored Projects

Federal Crowdsourcing and Citizen Science Community

The Federal Community of Practice on

Other Innovation Communities

- Challenges and Prizes
- OpenGov

Federal Crowdsourcing and Citizen Science Catalog

FIND PROJECTS:

Search for

FILTER BY:

- Project Topic
- Agency Sponsor
- Agency Partner
- Participant Age
- Intended Outcomes

PROJECTS	AGENCIES
301	25

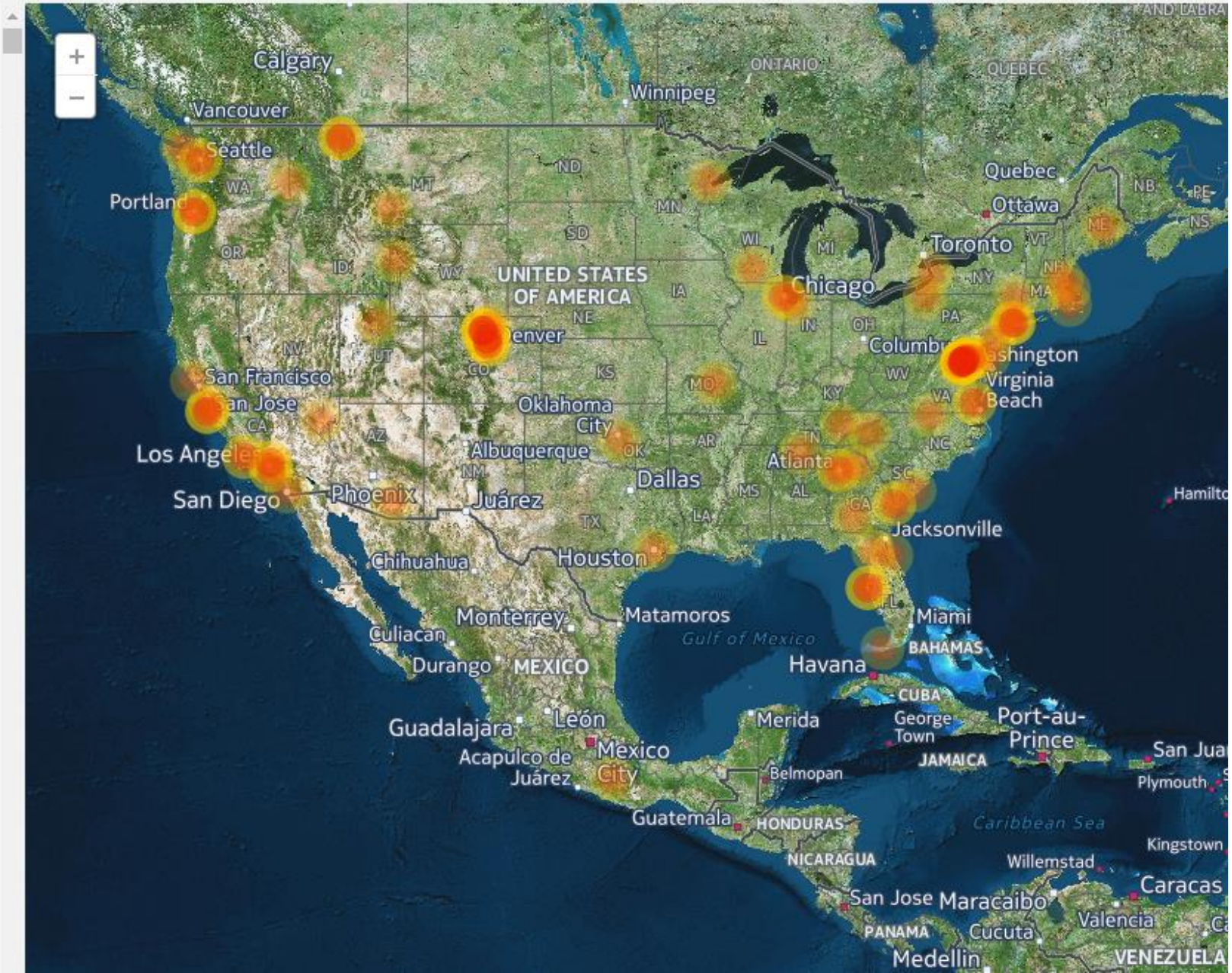
IDAH2O Master Water Stewards
by U.S. Environmental Protection Agency (EPA)

2016 National Parks BioBlitz - Acadia Lepidoptera BioBlitz
by National Park Service (NPS)

2016 National Parks BioBlitz - American Samoa
by National Park Service (NPS)

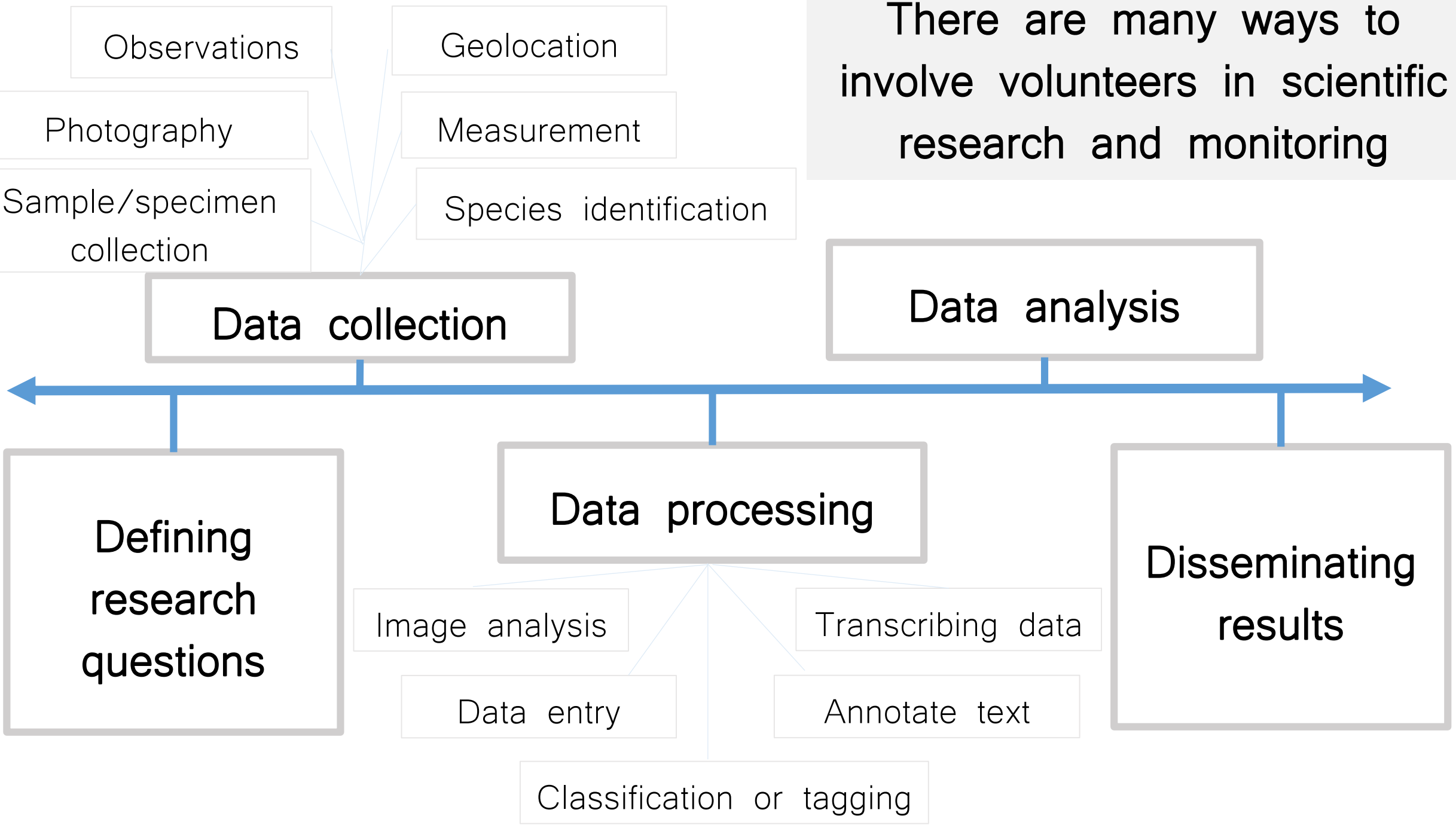
2016 National Parks BioBlitz - Antietam: Grassland Birds
by National Park Service (NPS)

2016 National Parks



What is EPA doing?

There are many ways to involve volunteers in scientific research and monitoring




Citizen science at EPA: 1) Work with **communities** to understand local problems; 2) **Monitor** the environment for environmental protection; 3) Engage volunteers in **research** relevant to EPA's mission; 4) **Educate** the public about environmental issues.


EPA goals and activities

1. Supporting community groups
2. Facilitating citizen science at EPA
3. Supporting new research approaches
4. Building communities of practice
5. Technology infrastructure (air, water sensors)

Image: Mike Hewitt/Getty Images

Not business as usual!

Issue: The Paperwork Reduction Act is an administrative hurdle.

Solution: OMB has approved EPA's **generic Information Collection Request** (ICR) that will streamline the approval process.

Modernizing Environmental Monitoring

Present

Future

EPA examples

Air Sensor Toolbox for Citizen Scientists provides guidance on affordable, next-generation air quality sensors.

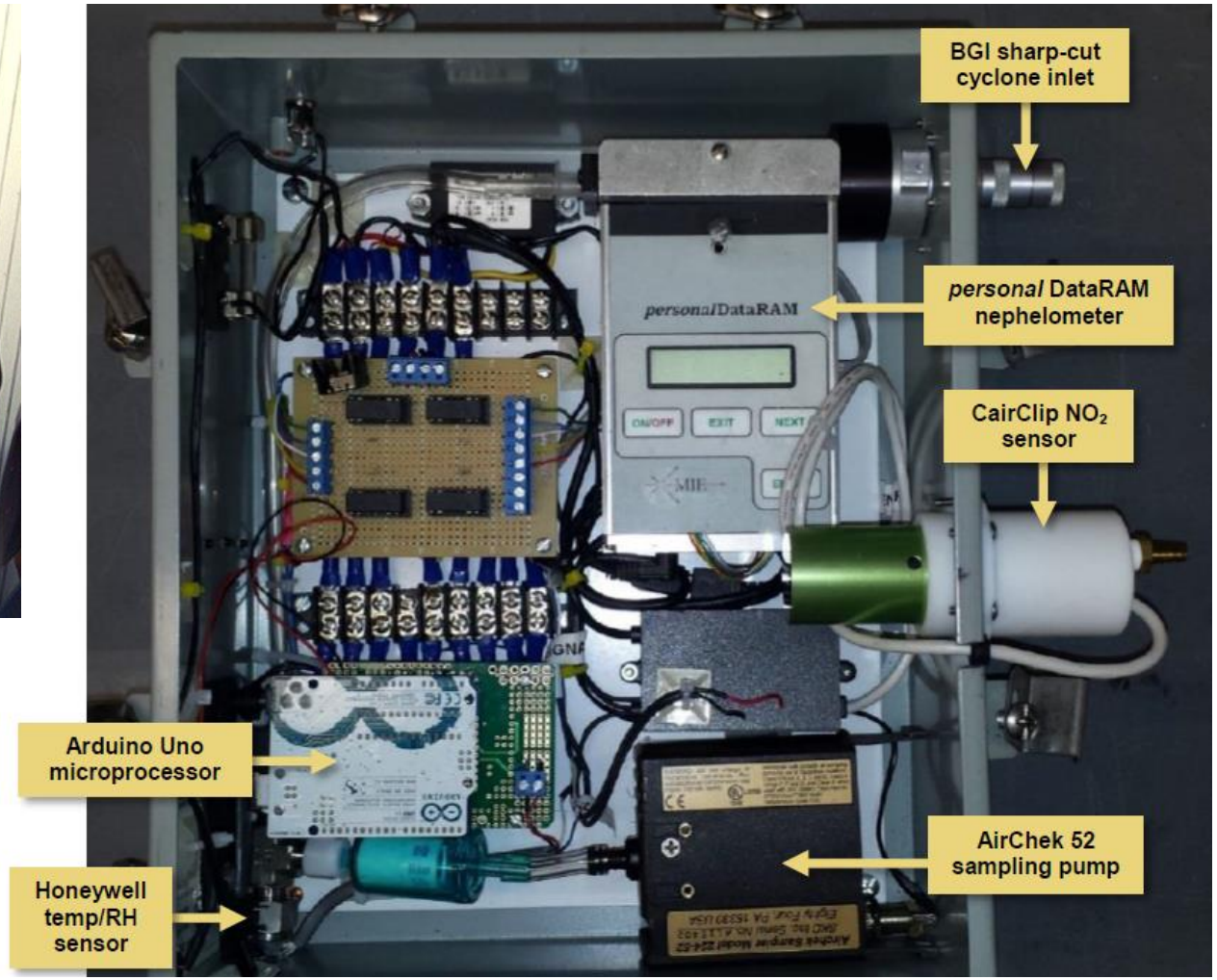
Air Sensor Citizen Science Toolbox EPA Measure • Learn • Share

Environmental Justice –– Ironbound Community, Newark NJ

Community members conduct air monitoring with EPA

- NO_2 sensor
- $PM_{2.5}$

High quality instruments and data



Instruments in "briefcase-sized" package

Show Me the Honey!

will engage amateur beekeepers to provide data and honey samples to better understand the effects of environmental stressors on honey bee health

CyanoScope

will develop methods to facilitate citizen scientist involvement in harmful algal bloom research, including using smartphone microscopy to identify characteristic cyanobacteria species groups.

Image credit: NASA

The Challenging Nutrients Coalition has built and is coordinating on a group of strategic and connected activities addressing nutrient related water quality issues, management and recovery.

Efforts underway:

Nutrient Sensor Challenge
Market/Economic Research for continuous monitoring
Nutrient Recycling Challenge
Data visualization and integration
Phosphorus Recovery Grand Challenge
Nitrogen Reduction Grand Challenge

What are the big issues?

- Messaging and data interpretation
- Emerging technologies
- Data quality
- Strategic opportunities for research